REMARKS

Claims 1-15, 17, 18, 20-22 and 24-26 are pending in the application.

Claims 1-15, 17, 18, 20-22 and 24-26 are rejected.

Claims 1-3 and 5-9 are rejected under 35 U.S.C. 103(a).

Claim 4 is rejected under 35 U.S.C. 103(a).

Claim 10 is rejected under 35 U.S.C. 103(a).

Claim 11 is rejected under 35 U.S.C. 103(a).

Claims 12 and 13 are rejected under 35 U.S.C. 103(a).

Claim 14 is rejected under 35 U.S.C. 103(a).

Claim 14 is rejected under 35 U.S.C. 103(a).

Claims 20, 21 and 25 are rejected under 35 U.S.C. 103(a).

Claims 1, 12, 15 and 22 stand amended. No new matter is added.

Claims 1-15, 17, 18, 20-22 and 24-26 remain in the case for consideration.

Applicant requests reconsideration and allowance of the claims in light of the above amendments and following remarks.

Claim Rejections – 35 U.S.C. § 103

Claims 1-3 and 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 4,804,633 to Macelwee et al. ("Macelwee") in view of US Patent No. 5,643,822 to Furukawa et al. ("Furukawa") and US Patent No. 6,231,673 to Maeda ("Maeda").

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Macelwee and Furukawa in view of Maeda, and further in view of US Patent No. 5,994,201 to Lee ("Lee").

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Macelwee, Furukawa in view of Maeda, and further in view of US Patent No. 6,074,917 to Chang et al ("Chang").

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Macelwee and Furukawa in view of Maeda, and further in view of US Patent No. 6,180,493 to Chu ("Chu").

The applicant respectfully traverses the rejections.

With respect to independent claim 1, this method claim is amended to clarify that the CVD oxide layer is formed directly on the thermal oxide layer after growing the thermal oxide layer. It is also important to note that claim 1 recites that the thermal oxide layer is formed in a chemical vapor deposition apparatus.

Macelwee discloses in FIGS. 3 and 4 and at column 3, lines 29-56, that the silicon dioxide cap layer 30 is deposited by low pressure chemical vapor deposition before

transferring the wafer to "a novel annealing furnace" in which the thermal oxide layer 32 is grown. Macelwee reverses the process recited in amended independent claim 1. Macelwee also does not grow the thermal oxide layer in a CVD apparatus as is recited in claim 1. Rather, the thermal oxide layer is formed in the annealing furnace as in the prior art.

Further, there is no suggestion to combine Macelwee and Furukawa. Macelwee grows the thermal oxide layer 32 directly from the dioxide cap layer 30. In Furukawa, the pad oxide layer 12 is formed first and then pad nitride layer 14 is formed on top of the pad oxide layer 12. Furukawa discloses optionally forming an additional CVD oxide layer on top of the nitride layer (see Column 3, lines 51-53 and Column 4, lines 28-35). Because in Furukawa the nitride layer 14 is formed on top of the thermal oxide layer 12 before forming a CVD oxide layer and in Macelwee the thermal oxide layer 32 is grown after depositing the oxide cap layer 30, there is no way to combine Macelwee and Furukawa to result in forming a thermal oxide layer in a CVD apparatus and subsequently forming a CVD oxide layer directly on the thermal oxide layer as is recited in independent claim 1. As a result, the method combined by the inventive methods disclosed in Macelwee and Furukawa would not produce a device that is to be formed by an inventive method claimed in claim 1.

Thus, combining Macelwee and Furukawa does not disclose each and every element of independent claim 1 and, accordingly, does not present a *prima facie* case of obviousness. Further, there exists no suggestion to even combine Macelwee and Furukawa to get the method recited in independent claim 1. Therefore, independent claim 1 is believed to be allowable and allowance is respectfully requested.

Claims 2-3 and 5-9 depend from claim 1, and for at least the same reasons these claims are believed to be allowable and allowance is respectfully requested.

Claim 4 depends from claim 1 and therefore necessarily includes all of the limitations of claim 1. The addition of Lee does not cure the deficiencies of Macelwee and Furukawa. Therefore, claim 4, for at least the reasons given for claim 1, is believed to be allowable and allowance is respectfully requested.

Claim 10 depends from claim 1 and therefore necessarily includes all of the limitations of claim 1. The addition of Chang does not cure the deficiencies of Macelwee and Furukawa. Therefore, claim 10, for at least the reasons given for claim 1, is believed to be allowable and allowance is respectfully requested.

Claim 11 depends from claim 1 and therefore necessarily includes all of the limitations of claim 1. The addition of Chu does not cure the deficiencies of Macelwee and Furukawa. Therefore, claim 11, for at least the reasons given for claim 1, is believed to be allowable and allowance is respectfully requested.

Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Macelwee in view of Maeda and US Patent No. 5,837,612 to Ajuria et al ("Ajuria").

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Macelwee and Maeda in view of Ajuria, and further in view of Chang.

The applicant respectfully traverses the rejections.

Independent claim 12 is also amended to clarify that the CVD oxide layer is formed directly on the thermal oxide layer after growing the thermal oxide layer on the single crystalline silicon substrate.

As described above, Macelwee reverses the recited process by growing the thermal oxide layer 32 after forming the oxide cap layer 30. Macelwee also does not grow the thermal oxide layer 32 in a CVD apparatus. Further, Macelwee teaches directly away from forming the thermal oxide layer 32 and oxide cap layer 30 in the same CVD apparatus as is recited in claim 12, because Macelwee specifically discloses growing the thermal oxide layer 32 in Macelwee's "novel annealing furnace" (see column 3, lines 34-41). Therefore, there exists no suggestion within Macelwee and Maeda to combine these two disclosures.

Thus, the combination of Macelwee, Maeda and Ajuria fails to disclose each and every element of independent claim 12 and, accordingly, the combination fails to present a *prima facie* case of obviousness. Also, there exists no suggestion to combine Macelwee and Maeda.

Therefore, independent claim 12 is believed to be allowable and allowance is respectfully requested.

Claims 13 and 14 depend from independent claim 12. The addition of Chang does not cure the deficiencies of the combination of Macelwee, Maeda and Ajuria. Thus, for at least the same reasons given for claim 12, these claims are believed to be allowable and allowance is respectfully requested.

Claims 15, 17, 18, 22, 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,140,208 to Agahi et al. ("Agahi") in view of Maeda and Ajuria.

The applicant respectfully traverses the rejections.

With respect to independent claims 15 and 22, both claims recite that a thickness of 8.8 Å to 44 Å of substrate is *consumed* during the formation of the thermal oxide layer. Agahi makes no mention whatsoever about the consumption of the substrate during the formation of thermal oxide 23. Agahi does not disclose any benefits or drawbacks with respect to various thicknesses of any possible substrate consumption. Maeda and Ajuria fail to cure this deficiency of Agahi.

Therefore, the combination of Agahi, Maeda and Ajuria fails to disclose each and every element of independent claims 15 and 22. Thus, for at least these reasons, these claims are believed to be allowable and allowance is respectfully requested.

Claims 17 and 18 depend from independent claim 15. Claims 24 and 26 depend from independent claim 22. For at least the same reasons given for claim claims 15 and 22, these claims are believed to be allowable and allowance is respectfully requested.

Claims 20, 21 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agahi and Maeda in view of Ajuria, and further in view of Macelwee and Chang.

Applicant respectfully traverses the rejections.

Claims 20 and 21 depend from independent claim 15 and claim 25 depends from independent claim 22. Thus, these dependent claims necessarily include all of the elements of their corresponding independent claims. As described above, claims 15 and 22 recite that a thickness of 8.8 Å to 44 Å of substrate is consumed during the formation of the thermal oxide layer and Agahi, Maeda and Ajuria do not disclose this recited element. The addition of Macelwee and Chang fails to cure this deficiency.

Therefore, for at least the same reasons given for claims 15 and 22, claims 20, 21 and 25 are believed to be allowable and allowance is respectfully requested.

In conclusion

For the foregoing reasons, reconsideration and allowance of claims 1-15, 17, 18, 20-22 and 24-26 of the application as amended is solicited. The Examiner is encouraged to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

Respectfully submitted,
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I hereby certify that this correspondence is being transmitted to the U.S. Patent and Trademark Office via facsimile number (703) 872-9306 on May 5, 2005.

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